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REREGISTRATION STUDIES: STRYCHNINE EFFECTS[1]

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Abstract:

This talk summarized several wildlife toxicology studies required for reregistration of strychnine: (1) avian dietary LC_{50}s in Mallard ducklings and Bobwhite quail chicks (GDLN 71-2), (2) avian reproduction effects in Mallard ducks and Bobwhite quail (GDLN 71-4), and (3) aquatic LC_{50}s in Rainbow trout, Bluegill sunfish, and invertebrates (Daphnia magna).

In the avian dietary studies, 8-day-old ducklings were fed 9.75, 19.5, 39, 78, 156, 312, or 0 (control) ppm strychnine/Startena® diets for 5 days, with a 3-day recovery period. A similar design involving 312, 625, 1250, 2500, 5000, and 0 ppm diets was conducted with 12-day Bobwhite quail chicks. No-observed-effect-concentrations (NOEC) were 78 ppm and 1250 ppm strychnine in ducklings and quail, respectively.

In the avian-reproduction studies, 35, 70, and 140 ppm (adult mallards) and 300, 600, and 1200 ppm strychnine/Layena® diets (adult quail) were fed for 20 and 22 weeks respectively to groups of breeding birds. Key results were: (1) the NOEC for F_0 ducks and quail was 35 ppm 1200 ppm, respectively, (2) mean egg production was decreased in mallard hens fed 140 ppm strychnine diets, and (3) "normal-hatching" F_1 generation ducklings from the eggs of mallards fed 140 ppm had significantly greater mortality by 14 days after hatching. Thus, several reproductive effects occurred in ducks; whereas, essentially no effects were noted in quail at the diet levels tested.

Although a special solvent was used to make strychnine soluble in water, static aquatic studies with trout and sunfish yielded 96-h LC_{50} values of 2.3 mg/l and 0.76 mg/l, respectively -- 96-h NOECs of 0.35 mg/l and 0.31. Daphnia became immobile after 48 h exposure.

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